

Application No. 10/024,746
Amendment dated May 14, 2004
Reply to Office Action of April 9, 2004

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-31 (Cancelled)

Claim 32 (currently amended) A lightweight door for motor vehicles comprising:

5 ~~an essentially U-shaped~~ a supporting frame comprising a U-shaped portion comprising a hinge support forming one U-limb, a lock support forming the other U-limb, and a door bottom that interconnects the hinge support and lock support;

inner and outer window gutter profiles made from light metal or a light metal alloy and fixedly connected to the hinge support and lock support, wherein if the lightweight door is installed in a motor vehicle body, the inner and outer window gutter profiles are essentially aligned in the longitudinal direction of the motor vehicle body;

10 a lateral impact protection element having first and second ends fixedly connected to the ~~U-shaped~~ supporting frame, wherein the lateral impact protection element is an extruded profile made from light metal or a light metal alloy; and

a window frame made of light metal or a light metal alloy, the window frame having first and second ends fixedly connected to the inner window gutter profile;

15 wherein the ~~U-shaped~~ supporting frame is a one-piece light metal or light metal alloy part selected from the group consisting of a pressed part and a deep drawn part.

Claim 33 (currently amended) The lightweight door of claim 32, wherein the ~~U-shaped supporting frame consists of~~ alloy part comprises a sheet of aluminum.

Claim 34 (currently amended) The lightweight door of claim 33, wherein the sheet of aluminum has a thickness of approximately 1.2 mm to approximately 1.8 mm.

Claim 35 (new) The lightweight door of claim 34, wherein the sheet of aluminum has a thickness of 1.6 mm.

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Claim 36 (new) The lightweight door of claim 32, wherein a single-part outer skin of the door is permanently connected to the supporting frame and the outer window gutter profile.

Claim 37 (currently amended) The lightweight door of claim 32, wherein the ~~U-shaped~~ supporting frame forms part of an inside skin of the door.

Claim 38 (currently amended) The lightweight door of claim 32, ~~wherein the U-shaped supporting frame forms~~ further comprising an area-shaped cross stay which closes the ~~basic U-shaped~~ portion and which is located opposite the door bottom.

Claim 39 (cancelled)

Claim 40 (currently amended) The lightweight door of claim 32, wherein the ~~connection regions of the U-shaped~~ supporting frame, inner door gutter profile, lateral impact protection element and window frame spatially coincide so as to form structural frame gussets.

Claim 41 (new) The lightweight door according to claim 32, wherein, in more heavily loaded areas, reinforcement and connection sheets are arranged on the supporting frame and permanently connected to said supporting frame by a connection technique selected from the group consisting of press-riveting, bonding, and welding.

Claim 42 (currently amended) The lightweight door according to claim 40, wherein, ~~in the region of structural frame gussets,~~ reinforcement and connection sheets are arranged on the ~~U-shaped~~ supporting frame and permanently connected to the ~~U-shaped~~ supporting frame at the structural frame gussets by a connection technique
5 selected from the group consisting of press-riveting, bonding, and welding.

Claim 43 (new) The lightweight door of claim 41, wherein the reinforcement and connection sheets are parts selected from the group consisting of pressed parts and deep-drawn parts.

Claim 44 (currently amended) The lightweight door of claim 41, wherein the reinforcement and connection sheets, in part, form hollow chambers with the ~~U-shaped~~ supporting frame at the hinge support.

Claim 45 (new) The lightweight door of claim 32, wherein the inner window gutter profile is a box-section extrusion profile.

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Claim 46 (new) The lightweight door of claim 32, wherein the inner window gutter profile is straight.

Claim 47 (currently amended) The lightweight door of claim 32, wherein the first and second ends of the lateral impact protection element are permanently attached to the ~~L-shaped~~ supporting frame by brackets.

Claim 48 (new) The lightweight door of claim 32, wherein upper and lower hinge point strengthening plates, made from light metal or a light metal alloy, are permanently attached to the hinge support.

Claim 49 (new) The lightweight door of claim 48, wherein the lateral impact protection element on a front side door is arranged so as to slope downward from the hinge support to the lock support, and a free limb of the upper hinge point strengthening plate is L-shaped and directly welded together with the first end of the
5 lateral impact protection element.

Claim 50 (new) The lightweight door of claim 48, wherein the lateral impact protection element is arranged on a rear side door so as to be upward sloping from the hinge support to the lock support, and wherein the lower hinge point strengthening plate is L-shaped, with its free L-limb being permanently connected to the
5 lateral impact protection element.

Claim 51 (new) The lightweight door of claim 32, wherein the first and second ends of the window frame extend beyond the front and rear ends of the inner window gutter profile, where they are permanently connected to said inner window gutter profile.

Claim 52 (new) The lightweight door of clam 32, wherein the first and second ends of the window frame abut on top of the front and rear ends of the inner window gutter profile, where they are permanently connected to said inner window gutter profile.

Claim 53 (new) The lightweight door of claim 32, wherein the window frame, on the side facing the lock support is reinforced by an elongated frame reinforcement part (11d).

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Claim 54 (new) The lightweight door of claim 53, wherein the frame reinforcement part (11d) is selected from the group consisting of a pressed part and a deep-drawn part made from light metal or a light metal alloy, said frame reinforcement part (11d) being welded to the window frame.

Claim 55 (new) The lightweight door of claim 54 wherein the frame reinforcement part (11d) is also welded to the outer window gutter profile.

Claim 56 (new) The lightweight door of claim ~~52~~ 53, wherein said window frame has an upper angular section integrated in the frame reinforcement part (11d).

Claim 57 (new) The lightweight door of claim 32, wherein a mirror triangle is formed at a top end of the hinge support and a cross stay, above the inner window gutter profile.

Claim 58 (new) The lightweight door of claim 57, wherein said mirror triangle (11c) is a reinforcement and connection sheet.

Claim 59 (new) The lightweight door of claim 32, wherein the light metal is aluminum and the light metal alloy is an aluminum alloy.

Claim 60 (currently amended) The lightweight door of claim ~~4~~ 32, wherein the fixed connections are established by welding.

Claim 61 (new) The lightweight door of claim 48, wherein the lateral impact protection element on a front side door is arranged so as to be horizontal from the hinge support to the lock support, and a free limb of the upper hinge point strengthening plate is L-shaped and directly welded together with the first end of the lateral impact
5 protection element.

Claim 62 (new) The lightweight door of claim 48, wherein on a rear side door the lateral impact protection element is arranged so as to be horizontal from the hinge support to the lock support, and wherein the lower hinge point strengthening plate is L-shaped, with its free L-limb being permanently connected to the lateral impact
5 protection element.

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- Claim 63 (currently amended) A lightweight door for motor vehicles
- 5 comprising:
- ~~an essentially U-shaped~~ a supporting frame comprising a U-shaped portion comprising a hinge support forming one U-limb, ~~and a locked support forming the other~~ U-limb, and a door bottom that interconnects the hinge support and lock support;
- inner and outer window gutter profiles made from light metal or a light
- 10 metal alloy and fixedly connected to the hinge support and lock support, wherein if the lightweight door is installed in a motor vehicle body, the inner and outer window gutter and profiles are essentially aligned in the longitudinal direction of the motor vehicle body;
- a lateral impact protection element having first and second ends fixedly
- 15 connected to the ~~U-shaped~~ supporting frame, wherein the lateral impact protection element is an extruded profile made from light metal or a light metal alloy; and
- a window frame made of light metal or a light metal alloy, the window frame having first and second ends fixedly connected to the inner window gutter profile;
- wherein the ~~U-shaped~~ supporting frame is a one-piece light metal or light
- 20 metal alloy part selected from the group consisting of a pressed part and a deep drawn part;
- wherein the ~~U-shaped~~ supporting frame forms part of an inside skin of the door; and
- ~~wherein the U-shaped supporting frame forms further comprising an area-~~
- 25 shaped cross stay which closes the ~~basic U-shape~~ U-shaped portion and which is located opposite the door bottom;
- wherein the connection regions of the ~~U-shaped~~ supporting frame, inner window gutter profile, lateral impact protection element and window frame spacially coincide so as to form structural frame gussets; and
- 30 wherein the reinforcement and connection sheets are arranged on the ~~U-shaped~~ supporting frame and permanently connected to the ~~U-shaped~~ supporting frame

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by a connection technique selected from the group consisting of press-riveting, bonding, and welding.

Claim 64 (new) The lightweight door of claim 63, wherein the reinforcement and connection sheets are selected from the group consisting of pressed parts and deep-drawn parts.

Claim 65 (new) The lightweight door of claim 63, wherein the reinforcement and connection sheets in part form hollow chambers with the supporting frame at the hinge support.

Claim 66 (currently amended) A lightweight door for motor vehicles comprising:

~~an essentially U-shaped~~ a supporting frame comprising a U-shaped portion comprising a hinge support forming one U-limb, a lock support forming the other U-limb, and a door bottom that interconnects the hinge support and lock support;

inner and outer window gutter profiles made from aluminum or an aluminum alloy and fixedly connected to the hinge support and lock support, wherein if the lightweight door is installed in a motor vehicle body, the inner and outer window gutter profiles are essentially aligned in the longitudinal direction of the motor vehicle body;

a lateral impact protection element having first and second ends fixedly connected to the ~~U-shaped~~ supporting frame, wherein the lateral impact protection element is an extruded profile made from aluminum or an aluminum alloy and

a window frame made of aluminum or an aluminum alloy, the window frame having first and second ends fixedly connected to the inner window gutter profile;

wherein the ~~U-shaped~~ supporting frame is a one-piece light metal or light metal alloy part selected from the group consisting of a pressed part and a deep drawn part.

Claim 67 (currently amended) A lightweight door for motor vehicles comprising:

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~~an essentially U-shaped~~ a supporting frame comprising a U-shaped portion comprising a hinge support forming one U-limb, a lock support forming the other U-limb, and a door bottom that interconnects the hinge support and lock support;

inner and outer window gutter profiles made from magnesium or a magnesium alloy and fixedly connected to the hinge support and lock support, wherein if the lightweight door is installed in a motor vehicle body, the inner and outer window gutter profiles are essentially aligned in the longitudinal direction of the motor vehicle body;

a lateral impact protection element having first and second ends fixedly connected to the ~~U-shaped~~ supporting frame, wherein the lateral impact protection element is an extruded profile made from magnesium or a magnesium alloy; and

a window frame made of magnesium or a magnesium alloy, the window frame having first and second ends fixedly connected to the inner window gutter profile;

wherein the ~~U-shaped~~ supporting frame is a one-piece light metal or light metal alloy part selected from the group consisting of a pressed part and a deep drawn part.